Aussanee Waiyalert 2014: Mapping of Blast Diseases Resistance Genes in Rice using BC_2F_6 Populations of a cross KDML105 x IR64. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Tanee Sreewongchai, Ph.D. 118 pages.

Rice (*Oryza sativa* L.) is the most important cereal crops and more than one half of the world's populations consume rice as staple food. The Thai jasmine rice or Khao Dawk Mali 105 (KDML 105) is the most famous and popular rice variety in Thailand and many other countries. The advantage of this variety is good cooking quality with aroma. However, it is photoperiod sensitive, prone to severe lodging and susceptible to many diseases and insects. Especially, it is susceptible to blast disease. IR64 rice variety has a broad spectrum resistance to blast pathogen in Thailand. Polygenic resistance genes were identified in this variety. To confirm the location of these genes, backcross inbred line (BIL) population was developed from the cross between KDML105 and IR64. A total of 192 BC_2F_6 BIL were examined to locate the resistance gene using 6 virulent blast isolates. The study confirms the presence of broad spectrum resistance loci in IR64 variety on chromosomes 2, 3, 8 and 12. Two of the loci located on chromosome 3 and 8 are new and not reported before. These loci could be exploited for the development of broad spectrum blast diseases resistant rice varieties after being validated. Also, IR64 could be utilized as a donor of blast resistance loci to develop durable blast resistant varieties.

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